

REMARKS

Reexamination and reconsideration of claims 1, 2, 5-11, 13, 14, and 16-42 are respectfully requested. Claims 3, 4, 12, and 15 have been cancelled. The Examiner's acknowledgement of Applicant's Information Disclosure Statement is appreciated.

The drawings were objected to under 37 C.F.R. 1.83(a) for not showing every feature of the invention specified in the claims. Attached hereto is proposed revision to Fig. 2 removing a portion of colored regions 28, 30, and 32 thereby representing the colored region being discontinuous. Withdrawal of the objection to the drawings is respectfully requested.

Claim 8 was objected to for lack of antecedent basis for "the stripes." The dependency of claim 8 has been changed to provide antecedent basis for "the stripes." Withdrawal of the objection to claim 8 is respectfully requested.

Claims 1, 7, 9-11, 14, 17, 19, 21, 22, 37, and 38 were rejected under 35 U.S.C. sec. 102(b) applying U.S. Pat. No. 5,379,363 ('363). The '363 patent requires an optical fiber ribbon 10,20 having respective sets of marks 14,24 that represent a number given to optical fiber ribbon 10,20 for identification. See Figs. 3-4 and Col. 4, 11. 15-22 of the '363 patent. In other words, the number of marks in a set is summed to arrive at a number for optical fiber ribbon 10,20. For a patent to be applicable under sec. 102(b), the patent must, *inter alia*, disclose each and every feature of the claimed invention.

The amendment of claim 1 is not an admission that the art of record teaches, discloses, or suggests the features of the claim. Claim 1 recites a fiber optic cable including a tube defining an interior passage therein, an optical ribbon disposed in the interior passage of the tube, the optical ribbon including a plurality of generally parallel optical fibers arranged in a generally planar array and bound together by a covering of a matrix material surrounding said generally planar array, the

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optical ribbon having at least a first colored region and a second colored region, wherein the first and second colored regions respectively denote first and second characters of at least a two-character identifier for the optical ribbon serving to indicate an optical ribbon number.

It is respectfully submitted that at least each and every feature of claim 1 is not disclosed by the '363 patent. The '363 patent requires marks 14,24 in sets that are counted to arrive at a number given to respective optical fiber ribbon 10,20. See Figs. 3-4 of the '363 patent. For example, the eighth optical fiber ribbon would require eight marks in a set for identification. Unlike the '363 patent, an optical fiber ribbon of the present invention has first and second colored regions that respectively denote first and second characters of at least a two-character identifier for the optical ribbon serving to indicate an optical ribbon number. Consequently, optical fiber ribbons according to the present invention may, for example, advantageously identify up to ninety-nine optical fiber ribbons with just two colored regions. On the other hand, the ninety-ninth ribbon of the '363 patent requires ninety-nine marks per set. For at least these reasons, withdrawal of the sec. 102(b) rejection of claims 1, 7, and 9-11 is warranted and is respectfully requested.

Likewise, the amendment of claim 14 is not an admission that the art of record teaches, discloses, or suggests the features of the claim. Claim 14 recites an optical ribbon including a plurality of optical fibers arranged generally parallel to one another in a generally planar array, and a covering of a matrix material surrounding said generally planar array so as to cover and bind together the optical fibers, wherein the optical ribbon has an identifier visible at an outer surface of the matrix material, the identifier including at least two colored regions of different colors conveying identifying information about the

optical ribbon, wherein at least one of the colored regions has a color selected to denote an identifying number pre-assigned to the optical ribbon and another of the colored regions has a color selected to indicate a type of the optical fibers contained in the optical ribbon.

It is respectfully submitted that at least each and every feature of claim 14 is not disclosed by the '363 patent. Unlike the '363 patent, claim 14 recites two colored regions of different colors conveying identifying information about the optical ribbon, wherein at least one of the colored regions has a color selected to denote an identifying number pre-assigned to the optical ribbon and another of the colored regions has a color selected to indicate a type of the optical fibers contained in the optical ribbon. First, the Office Action does not cite any text in the '363 patent stating that the marks 14,24 are different colors. Moreover, there is no reason to use different colored marks in the '363 patent since it is only required to count the number of marks in a set. Additionally, the '363 patent does not disclose a colored region dedicated to identification of the optical fiber type in the optical fiber ribbon. For at least these reasons, withdrawal of the sec. 102(b) rejection of claims 14, 17, 19, and 21 is warranted and is respectfully requested.

Regarding claim 22, claim 22 recites a method for making a fiber optic cable including assigning a unique identifier having at least one character to each of a plurality of optical ribbons, each optical ribbon comprising a plurality of generally parallel optical fibers arranged in a generally planar array and bound together by a covering of matrix material surrounding said generally planar array, the optical fibers of each optical ribbon being of a predetermined type, providing at least two colored regions of different colors visible on an outer surface of the matrix material of each optical ribbon, at least one of the

colored regions having a color selected to denote said at least one character of the identifier for the optical ribbon and another of the colored regions having a color selected to denote the type of optical fibers in the optical ribbon, and disposing the optical ribbons in at least one passage of a cable component.

It is respectfully submitted that at least each and every feature of claim 22 is not disclosed by the '363 patent for at least these reasons stated above with respect to claim 14. Therefore, withdrawal of the sec. 102(b) rejection of claim 22 is warranted and is respectfully requested.

The amendment of claim 37 is not an admission that the art of record teaches, discloses, or suggests the features of the claim. Claim 37 recites an optical ribbon including a plurality of optical fibers arranged generally parallel to one another in a generally planar array, the optical fibers including at least one adjacent pair of optical fibers bound together by a connecting matrix material, the connecting matrix material being of a predetermined color for identifying said pair of optical fibers and covering less than all of the adjacent pair of optical fibers, and an outer matrix covering that encapsulates and binds together the optical fibers, the outer matrix covering being sufficiently transparent that the color of the connecting matrix material is visible through the outer matrix covering.

It is respectfully submitted that at least each and every feature of claim 37 is not disclosed by the '363 patent. The '363 patent requires optical fibers 1A-1D encapsulated in a transparent, or semitransparent, common outside covering 11. See the '363 patent at Col. 4, ll. 3-11. Unlike the '363 patent, claim 37 recites at least one adjacent pair of optical fibers bound together by a connecting matrix material, the connecting matrix material being of a predetermined color for identifying said pair of optical fibers and covering less than all of the adjacent pair of optical fibers, and an outer matrix covering

that encapsulates and binds together the optical fibers, the outer matrix covering being sufficiently transparent that the color of the connecting matrix material is visible through the outer matrix covering. An example of this optical ribbon is depicted in Fig. 6 of the present application. For at least these reasons, withdrawal of the sec. 102(b) rejection of claims 37 and 38 is warranted and is respectfully requested.

Claims 1, 14, 22, and 29-42 were rejected under 35 U.S.C. sec. 102(e) applying U.S. Pat. No. 6,381,390 ('390). The '390 patent requires an optical fiber ribbon 10 having a color-coding identification scheme. See the Abstract of the '390 patent. Fig. 1 depicts an optical fiber ribbon 10 requiring a top surface 7 that is a different color than a bottom surface 8. See the '390 patent at Col. 3, ll. 57-59. Fig. 2 depicts optical fiber ribbon 10 requiring that one or both edges 5,6 be made from a different color than top surface 7 and/or bottom surface 8. See the '390 patent at Col. 4, ll. 19-22. Fig. 3 depicts optical fiber ribbon 10 requiring at least one colored stripe 11 formed on top surface 7 and/or bottom surface 8, preferably stripe 11 contrasts with the color of surface 7,8. See the '390 patent at Col. 4, ll. 38-51. In other words, stripe 11 forms a tracer on the color to which it is applied, thereby forming more color combinations. Fig. 4 depicts a dual layer matrix design for optical fiber ribbon 10 and Fig. 5 depicts optical fiber ribbon 10 that uses subunits 17, where either embodiment may use the concepts of Figs. 1-3. See the '390 patent at Col. 4-5, ll. 52-20. For a patent to be applicable under sec. 102(b), the publication must, *inter alia*, disclose each and every feature of the claimed invention.

It is respectfully submitted that at least each and every feature of claim 1 is not disclosed by the '390 patent. The '390 patent requires color-coding using different colors on different surfaces of optical fiber ribbon 10. See the '390 patent at Col.

3-4, ll. 57-50. On the other hand, an optical fiber ribbon of the present invention has first and second colored regions that respectively denote first and second characters of at least a two-character identifier for the optical ribbon serving to indicate an optical ribbon number. The Office Action cites no text in '390 patent disclosing these features. Moreover, the '390 patent does not teach or suggest these features of claim 1. For at least these reasons, withdrawal of the sec. 102(e) rejection of claim 1 is warranted and is respectfully requested.

It is respectfully submitted that at least each and every feature of claim 14 is not disclosed by the '390 patent. The '390 patent requires color-coding using different colors on different surfaces of optical fiber ribbon 10. See the '390 patent at Col 3-4, ll. 57-50. On the other hand, claim 14 recites two colored regions of different colors conveying identifying information about the optical ribbon, wherein at least one of the colored regions has a color selected to denote an identifying number pre-assigned to the optical ribbon and another of the colored regions has a color selected to indicate a type of the optical fibers contained in the optical ribbon. The Office Action cites no text in '390 patent disclosing these features. Moreover, the '390 patent does not teach or suggest the features of claim 14. For at least these reasons, withdrawal of the sec. 102(e) rejection of claim 14 is warranted and is respectfully requested.

It is respectfully submitted that at least each and every feature of claim 22 is not disclosed by the '390 patent for at least these reasons stated above with respect to claim 14. Therefore, withdrawal of the sec. 102(e) rejection of claim 22 is warranted and is respectfully requested.

The amendment of claim 29 is not an admission that the art of record teaches, discloses, or suggests the features of the claim. Claim 29 recites a method for making an optical ribbon including arranging a plurality of optical fibers generally

parallel to one another in a generally planar array, extruding a covering of matrix material over the generally planar array of optical fibers to cover and bind the fibers together, and applying a series of colored regions to one side of the covering, the colored regions being in a predetermined arrangement visible at an outer surface of the covering, for conveying identifying information about a predetermined location of the optical ribbon in an optical ribbon stack.

It is respectfully submitted that at least each and every feature of claim 29 is not disclosed by the '390 patent. Unlike the '390 patent, claim 29 recites applying a series of colored regions to one side of the covering, the colored regions being in a predetermined arrangement visible at an outer surface of the covering, for conveying identifying information about a predetermined location of the optical ribbon in an optical ribbon stack. First, the Office Action does not cite any text in the '390 patent stating that the color-coding conveys information about a predetermined location of the optical ribbon in an optical ribbon stack. Moreover, the '390 patent does not disclose these features. For at least these reasons, withdrawal of the sec. 102(e) rejection of claims 29-33 is warranted and is respectfully requested.

Regarding claim 34, claim 34 recites an optical ribbon including a plurality of optical fibers arranged generally parallel to one another in a generally planar array, the optical fibers being arranged into at least two fiber sub-units each having at least one optical fiber, and an outer matrix covering that encapsulates and binds together the fiber sub-units, the outer matrix covering comprising separate regions of a first matrix material, the first matrix material adhered respectively to each of the fiber sub-units and a connecting region of a second matrix material joining adjacent fiber sub-units together, the first matrix material adhering to the fiber sub-units with a

greater tenacity than does the second matrix material such that the outer matrix covering preferentially splits at the connecting region between fiber sub-units whereby the separate regions of the first matrix material tend to remain adhered to the fiber sub-units upon separation thereof.

It is respectfully submitted that at least each and every feature of claim 34 is not disclosed by the '390 patent. Fig. 5 of the '390 patent discloses subunits 5,6 in a common matrix material 16. See the '390 patent at Col. 5, ll. 7-20. On the other hand, claim 34 recites at least two fiber sub-units each having at least one optical fiber, and an outer matrix covering that encapsulates and binds together the fiber sub-units, the outer matrix covering comprising separate regions of a first matrix material, the first matrix material adhered respectively to each of the fiber sub-units and a connecting region of a second matrix material joining adjacent fiber sub-units together, the first matrix material adhering to the fiber sub-units with a greater tenacity than does the second matrix material such that the outer matrix covering preferentially splits at the connecting region between fiber sub-units whereby the separate regions of the first matrix material tend to remain adhered to the fiber sub-units upon separation thereof. An example of this optical ribbon is depicted in Fig. 2D of the present application. For at least these reasons, withdrawal of the sec. 102(e) rejection of claims 34-36 is warranted and is respectfully requested.

It is respectfully submitted that at least each and every feature of claim 37 is not disclosed by the '390 patent. Fig. 5 of the '390 patent requires sub-units 17 that have optical fiber encased in a sub-unit resin matrix material 15. See the '390 patent at Col. 5, ll. 10-14. On the other hand, claim 37 recites at least one adjacent pair of optical fibers bound together by a connecting matrix material, the connecting matrix material being of a predetermined color for identifying said pair of optical

fibers and covering less than all of the adjacent pair of optical fibers. An example of this optical ribbon is depicted in Fig. 6 of the present application. For at least these reasons, withdrawal of the sec. 102(e) rejection of claims 37 and 38 is warranted and is respectfully requested.

Claim 39 recites an optical ribbon including a plurality of optical fibers arranged generally parallel to one another in a generally planar array, and a matrix covering that encapsulates and binds together the optical fibers, the matrix covering comprising a plurality of different colored regions formed of a first matrix material and bound respectively to the plurality of optical fibers for identifying the optical fibers, the matrix covering further comprising a second matrix material that intercedes between and maintains the colored regions substantially separate from one another, the first matrix material adhering to the optical fibers with a greater tenacity than the second matrix material, whereby the colored regions tend to remain adhered to the optical fibers.

It is respectfully submitted that at least each and every feature of claim 39 is not disclosed by the '390 patent. Fig. 4 of the '390 patent requires a dual matrix design. See the '390 patent at Col. 4, ll. 52-61. Fig. 5 of the '390 patent requires sub-units 17 that have optical fiber encased in a sub-unit resin matrix material 15, with a common matrix 16 surrounding all of the sub-unit matrix material 15. See the '390 patent at Col. 5, ll. 10-17. On the other hand, claim 39 recites a matrix covering comprising a plurality of different colored regions formed of a first matrix material and bound respectively to the plurality of optical fibers for identifying the optical fibers, the matrix covering further comprising a second matrix material that intercedes between and maintains the colored regions substantially separate from one another, the first matrix material adhering to the optical fibers with a greater tenacity

than the second matrix material, whereby the colored regions tend to remain adhered to the optical fibers. An example of this optical ribbon is depicted in Fig. 7 of the present application. For at least these reasons, withdrawal of the sec. 102(e) rejection of claims 39-42 is warranted and is respectfully requested.

Claims 2-6, 8, 12, 13, 15, 16, 18, 20, and 23-28 were rejected under 35 U.S.C. sec. 103(a) applying the '363 patent in view of the Mims, III publication and U.S. Pat. No. 5,796,905 ('905). For publications to be applicable under sec. 103(a), the combination of teachings must, *inter alia*, expressly or inherently, teach, disclose, or suggest each and every feature of the claimed invention. Additionally, motivation and suggestion to combine the publications must be present. For at least the reasons stated above with respect to claims 1, 14 and 22 withdrawal of the sec. 103(a) rejection of claims 2-6, 8, 12, 13, 15, 16, 18, 20, and 23-28 is warranted and is respectfully requested.

Claims 1-42 were rejected under 35 U.S.C. sec. 103(a) applying the Mims, III publication without a teaching reference. For publications to be applicable under sec. 103(a), the combination of teachings must, *inter alia*, expressly or inherently, teach, disclose, or suggest each and every feature of the claimed invention.

It is respectfully submitted that the applied art, taken alone or in combination with the other art of record, does not implicitly or expressly teach, disclose, or suggest all of the merits of claims 1-42. It is a fact that page 29 of the Mims, III publication does not teach, disclose, or otherwise suggest an optical fiber or a fiber optic cable. The fact of the matter is that the cited publication deals exclusively with an electrical resistor and the electrical resistance thereof. Thus, the Office Action failed to make a *prima facie* case of obviousness.


Second, the Mims, III publication is not analogous art. In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor, or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned. See the MPEP sec. 2141.01(a). First, the Mims, III publication deals with electrical resistance of an electrical resistor and is not applicant's field of endeavor. Second, the Mims, III publication deals with the problem of determining electrical resistance. See Mims, III publication at p. 29. The skilled artisan would have understood that optical ribbons do not have an electrical resistance, *per se*; rather, optical ribbons include optical fibers that transmit optical signals. For at least the reasons stated, withdrawal of the sec. 103(a) rejection of claims 1-42 is warranted and is respectfully requested.

No new fees are believed due in connection with this Reply. If any fees are due in connection with this Reply, please charge any fees, or credit any overpayment, to Deposit Account Number 19-2167.

Allowance of all pending claims is believed to be warranted and is respectfully requested.

The Examiner is welcomed to telephone the undersigned to discuss the merits of this patent application.

Respectfully submitted,


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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

The paragraph beginning at page 13, line 3 has been amended as follows:

FIG. 6 depicts another embodiment of the invention that provides for grouping and identification of optical fibers within a ribbon or within a fiber sub-unit thereof. Thus, an optical fiber ribbon or sub-unit is shown having four optical fibers 24. The optical fibers are arranged into two pairs of adjacent optical fibers. A colored material 64 is applied to one pair of optical fibers and a colored material 66 is applied to the other pair of optical fibers prior to extruding an outer covering 68 over all of the optical fibers. Application of colored materials 64, 66 can be accomplished by locating feed channels at the fiber entrance side of tool 40, rather than the fiber exit side of the tool as shown in Figure 4. The colored materials 64, 66 can have colors selected to identify each pair of fibers. The colored materials preferably are relatively high-adherence materials compared to the material of outer covering 68, such that the colored materials tend to remain adhered to the optical fibers when the outer covering is stripped away. Preferably, outer covering 68 is sufficiently transparent so that colored materials 64, 66 are visible through the outer covering. Colored materials 64, 66 and outer covering 68 can be extruded in rapid succession, within the same extrusion tool if desired. Alternatively, pairs of optical fibers 24 can be bonded together by applying colored materials 64, 66 to the fiber pairs, and subsequently the bonded fiber pairs can be fed through an extrusion tool for extruding outer covering 68 over the fiber pairs.

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

1. (amended) A fiber optic cable, comprising:
a tube defining an interior passage therein;
an optical ribbon disposed in the interior passage of the tube, the optical ribbon comprising a plurality of generally parallel optical fibers arranged in a generally planar array and bound together by a covering of a matrix material surrounding said generally planar array, the optical ribbon having at least a first colored region and a second colored region, wherein the first and second colored regions respectively denote first and second characters of at least a two-character identifier for the optical ribbon serving to indicate an optical ribbon number [an identifier visible at an outer surface of the matrix material, the identifier comprising at least two colored regions of different colors for conveying identifying information about the optical ribbon].

2. (amended) The fiber optic cable of claim 1, [wherein at least one of the colored regions has a color selected to distinguish the optical ribbon from other optical ribbons and] further comprising another of the colored region having [regions has] a color selected to denote a type of the optical fibers contained in the optical ribbon.

Please cancel claim 3 without prejudice.

Please cancel claim 4 without prejudice.

5. (amended) The fiber optic cable of claim 1, wherein the at least two-character identifier for the optical ribbon comprises at least first, second, third, and fourth colored regions of different colors, the first, second, and third colored regions serving to distinguish the optical ribbon from other

optical ribbons and the fourth colored region denoting the type of the optical fibers contained in the optical ribbon.

8. (amended) The fiber optic cable of claim 7 [1], wherein the stripes extend continuously lengthwise along the optical ribbon.

Please cancel claim 12 without prejudice.

13. (amended) The fiber optic cable of claim 1, further comprising a third [wherein one of the] colored region, the third colored region serving [regions serves] to indicate whether the optical fibers of the optical ribbon are single-mode or multi-mode optical fibers.

14. (amended) An optical ribbon, comprising:

a plurality of optical fibers arranged generally parallel to one another in a generally planar array; and

a covering of a matrix material surrounding said generally planar array so as to cover and bind together the optical fibers, wherein the optical ribbon has an identifier visible at an outer surface of the matrix material, the identifier comprising at least two colored regions of different colors conveying identifying information about the optical ribbon, wherein at least one of the colored regions has a color selected to denote an identifying number pre-assigned to the optical ribbon and another of the colored regions has a color selected to indicate a type of the optical fibers contained in the optical ribbon.

Please cancel claim 15 without prejudice.

29. (amended) A method for making an optical ribbon, comprising:
arranging a plurality of optical fibers generally parallel to one another in a generally planar array;

extruding a covering of matrix material over the generally planar array of optical fibers to cover and bind the fibers together; and

applying a series of colored regions [of different colors] to one side of the covering, the colored regions being in a predetermined arrangement visible at an outer surface of the covering, for conveying identifying information about a predetermined location of the optical ribbon in an optical ribbon stack.

37. (amended) An optical ribbon, comprising:

a plurality of optical fibers arranged generally parallel to one another in a generally planar array, the optical fibers including at least one adjacent pair of optical fibers bound together by a connecting matrix material, the connecting matrix material being of a predetermined color for identifying said pair of optical fibers and covering less than all of the adjacent pair of optical fibers; and

an outer matrix covering that encapsulates and binds together the optical fibers, the outer matrix covering being sufficiently transparent that the color of the connecting matrix material is visible through the outer matrix covering.